Accident Blackbox Detection using IOT

R Venkatesh, K Priyanka, G Varsha, E Siva Selvan

***Abstract*:** *The accident now happens a few days by car or bike riders, or traffic hazards or any family situation. Accidents resulting from careless driving are increased. When the accident occurs, many people lose their lives because the medical assistance is delayed. Using this black box system this system is designed to detect the basic reason for the accident. Incorporated with GSM, GPS, and sensors. Alcohol sensor detects alcohol and Eye-Blinking sensor conception for sleep while driving the car and using vibration sensor to detect car vibration. Speed is also an important reason why an accident occurred. Using Global Position System knows where the car occurs and uses Global System for Mobile Communication to send alert messages to one of the contact person and nearby hospital and police station. Both GPS and GSM are built into this system. This is connected to the WI-FI network, because GPS will send the location if the accident occurs and GSM will send the message to the contact person and nearby hospital and police station. This system is easy to install under the car because alert message will be sent by the system if an accident occurs. The data for how the accident will occur will be stored in the data base. The base of data is used to justify the accident. For the hypothetical situation this system is used. The system will save human life and decrease the delay of medical assistance.*

Keywords: Alcohol Sensor, Eye-Blinking Sensor, Global position System, Global system for Mobile Communication

I. INTRODUCTION

According to the world health organization, more than million people die each year because of the accidents. Many accidents happen because of the alcohol conception or overspeed otherwise sleeping while drove the car. This project is developed to collect the data of the speed of the car and measurement of eye blinking of the driving person and detect the driving person consume alcohol or not. GPS and GSM technology are used to vehicle mapping and accident alert. As we know current accident ratio, there are mostly these three reasons are behind the accident. Considering the practical aspects after the accident, we need to prepare all insurance, policy claims. There are several clauses in the polices, to safety each and every clause we need proper documentation, this accident block box helps us.

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This accident black box has accident tracking system. If we meet this tracking system sent the alerting message with accident location to the one of the contacts and nearby hospital and police station. This project is helps to save the people life.

The board cannot be damage while the car is fully damage because is located to bottom of the car.

II. LITERATURE SURVEY

A. **Amin, Md Syedul, Jubayer Jalil, and Mamun Bin Ibne Reaz. "Accident detection and reporting system using GPS, GPRS and GSM technology." 2012 International Conference on Informatics, Electronics & Vision (ICIEV). IEEE, 2012.**

In this system GPS used to found where we are. Nowadays GPS receiver has become important part of the vehicle. This paper is about monitor the speed of the vehicle and sent the alert message to center of alert service.

GPS will monitor speed of a vehicle and compare with the previous speed in every second. If the speed will be below the specified speed, it will assume accident has occurred.

The system will then send the accident location with time. The Global Positioning System is a global navigation satellite system. Mobile phone listens the GPS signals and find GPS receiver figure out exactly what we searching for. It made up ground station, receiver, satellite.

B. **Desai, Vikas, Swati P. Nawale, and Sachin R. Kokane. "Design and Implementation of GSM and GPS Based Vehicle Accident Detection System." IJIT 1.03 (2013): 1-4.**

The motorcycle accident is the huge major issue. The riders are not following the traffic rules. So, increase the death rate. This paper about whenever an accident occurred the wireless system sent the message to a one of the contact and nearby hospital and emergency medical service.

This system will be designed for the motorcycle. This project going to be another solution for the uncertain situation car door locking system.

C. **Vaishnavi, M., et al. "Intelligent alcohol detection system for car." International Journal of Scientific & Engineering Research 5.11 (2014): 2229-5518.**

The detection system contain MQ-2 alcohol gas sensor detects the alcohol content in the human breath. This sensor detects the presence of alcohol. This sensor has high sensitivity and response time. If the driver of the car concept the alcohol indicates drunk otherwise indicate sober. This alcohol sensor is suitable for detecting alcohol concentration on your breath, just like your common breathalyzer. It has a high sensitivity and fast response time. Sensor provides an analog resistive output based on alcohol concentration.

D. **Kim, Jungyun, et al. "Vibration sensor characteristics of piezoelectric electro-active paper." Journal of Intelligent Material Systems and Structures 21.11 (2010): 1123-1130.**

This sensor knows the at most normal vibration of the car. If low vibration happens it switch green lights on state, otherwise high vibration happens it switch the green light is not on state. The high vibration happens immediately the alert message to be send.

E. **Katkar, Suhas, Mahesh Manik Kumbhar, and Priti Navanath Kadam. "Accident Prevention System Using Eye Blink Sensor." International Research Journal of Engineering and Technology (IRJET) 3.05 (2016): 1588-1590.**

This sensor detects the variation of the eye blinking. Eye-blinking Sensor is Used to Check Whether Driving Person is Sleep or Not While Driving. If eye opening the output is low and eye closed output is high. The infra-red light is used to detect the sleeping while drive by reflected light. If any changes in the reflected light indicating the alert message. Driver drowsiness is recognized as an important factor in the vehicle accidents.
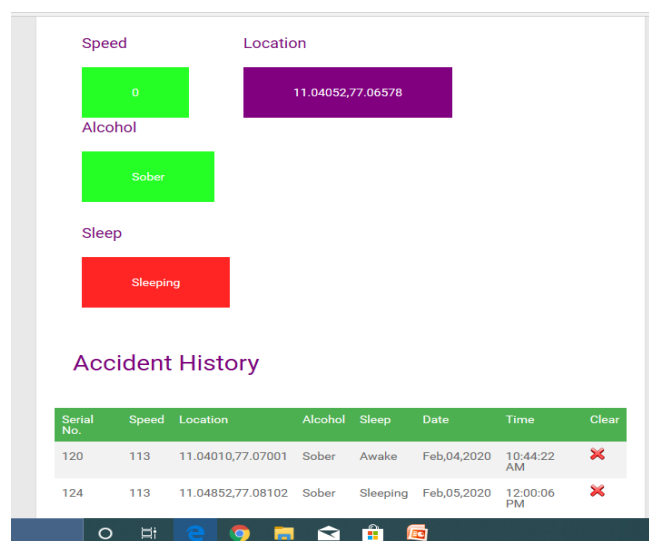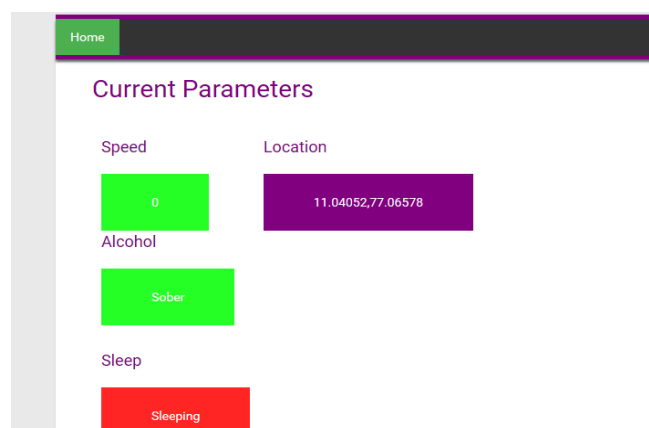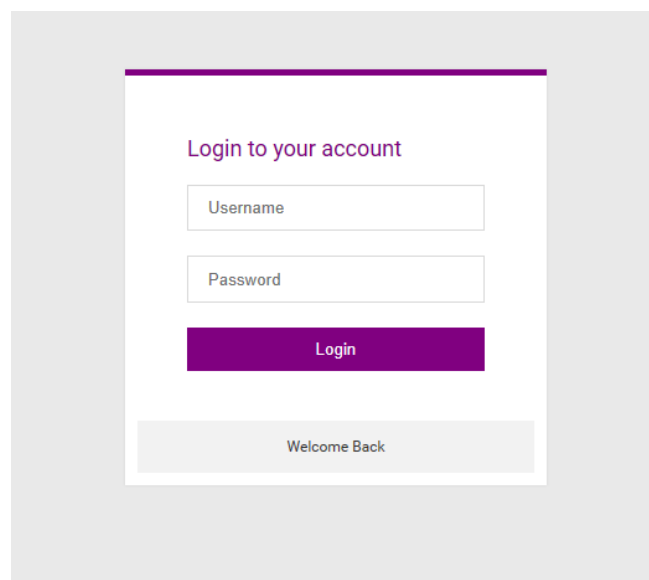
III. SYSTEM ARCHITECTURE

This project is about accident detection and send the alert message to one of the contact person and nearby police station and hospital. This project is placed in the bottom of the car. The power supply is supplying the power to the project. Transmitter is connected to the power supply and Node MCU. This Transmitter is converting the analog signal to digital signals. The Node MCU is connected to other sensors. This Node MCU have WIFI, it's connected to the phone. The Global System for Mobile Communication is connected to the Node MCU for sends the alert message. Global Positioning System for tracking signals for where we are. Alcohol sensor, Eye-Blinking Sensor and vibrating sensor connected to the Node MCU. If the car met with an accident it vibrating highly, that moment this Blackbox is sends an alert message with location. The database stores the accident measures.
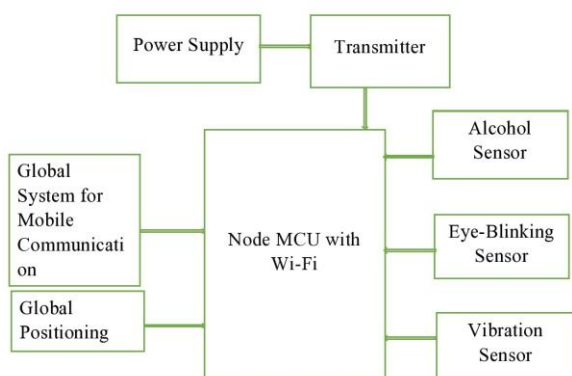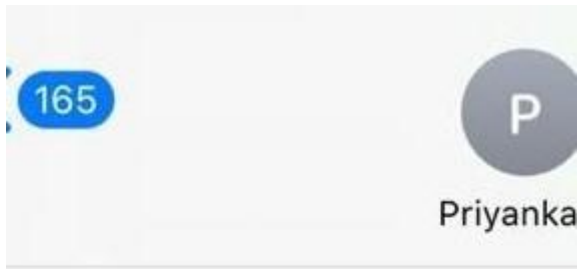

The Internet of Things is the network of physical devices, embedded with electronics, software, sensors. Each thing is uniquely identifiable through its embedded computing system but is able to inter-operate within the existing Internet infrastructure. When IoT is augmented with sensors and actuators, the technology becomes an instance of the more general class of cyber-physical systems, which also encompasses technologies such as smart grids, virtual power plants, smart homes, intelligent transportation and smart cities. These devices collect useful data with the help of various existing technologies and then autonomously flow the data between other devices.

IV. IMPLEMENTATION

Accident History

Serial No.	Speed	Location	Alcohol	Sleep	Date	Time	Clear
120	113	11.04010,77.07001	Sober	Awake	Feb,04,2020	10:44:22 AM	✖
124	113	11.04852,77.08102	Sober	Sleeping	Feb,05,2020	12:00:06 PM	✖

The other methods for detecting accidents are used, whether Arduino or the accelerometer. But we used Node MCU with WI-FI in our wok, using that the performance will be high compared with other methods. And it also stores the data in a database. Using that database we can avoid such accidents.

IX. CONCLUSION

This paper is proposed to detect and rescue the system from accidents. The database supplies accident data. Once the accident occurred the alert message is sent to one of the contact person and nearby hospital and nearby police station with location. Message sent via WI-FI network is the accident occurring. The scheme was tested with automobiles in real world applications. There will be no false alert message about the test results.

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V. ADVANTAGES

1. Integrated system.
2. Highly secured system.
3. Simple and not harmed system.
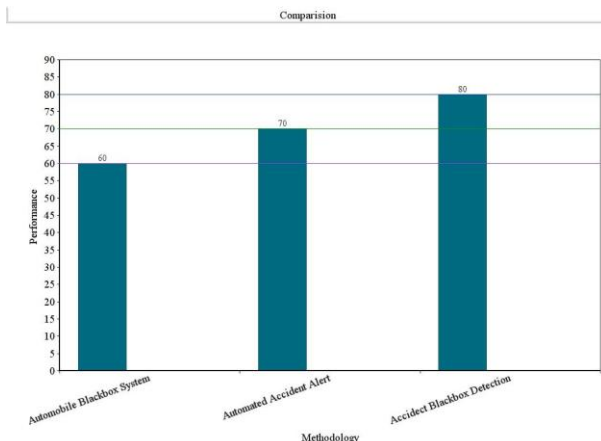4. Segregate both GSM&GPM

VI. LIMITATIONS

1. WI-FI is must.

VII. APPLICATIONS

1. Recovery of vehicle theft
With help of GPS receiver, when the vehicle is stolen, relocating and Recovery of the vehicle is possible.
2. Tracking system
Tracking the Vehicle in Real Time.

VIII. RESULT AND DISCUSSION

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